State of Connecticut

WEB E-Government Domain Technical Architecture

January 4, 2001

Version 1.0

History of Changes

11/30/00	Updated the product standards table.

EWTA Web / E-Government Domain Committee Report

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Mission

The E government Domain will define the policies, guidelines, best practices, technologies, and standards needed for adaptive deployment of electronic commerce and internet/intranet web applications. This will allow for seamless platform-independent and, secure anytime, anywhere access to state information.

The domain covers two broad categories of technology:

1. **integration domains** that combine and interface two or more technical domains; and
2. **applied domains** that identify specific technology to support a basic state Internet Protocol operation, i.e., presentation development and management technology, browsers, search engines, e-commerce architectures.

Introduction and Background

Electronic Government is the use of the Internet as a medium for providing public awareness of state services and transacting state business. Arguably, it is broader in scope but the EWTA domain team worked within this scope in order to be able to define tangible objectives and produce an implementation level document in the time allowed. The E-Government committee was established to define for Electronic Government the where we are, where we should be and how to get to the desired objective, in order to satisfy the architecture principles.

The E-Government domain topics were created from previously defined business drivers and technical architecture principles. The team then determined which of the technical architecture principles accurately applied to the scope topics. Due to the broad nature of the topics, it was found that most topics fit within all of the defined principles. Some principles were more applicable and in selected instances, the committee created new principles. Those principles with italics are of particular interest to the E-Government domain team.

The E-Government domain team scope topics are listed as follows.

Web publishing and content management

The objectives of the web publishing topics were assisted by the CMAC organization. CMAC, in existence for 4 years, had defined presentation guidelines for state agency web pages. Content management has no such advocate, operating rules or guidelines.

Legacy system interfaces to the web

This topic has been addressed by selected agencies but has been neglected as a statewide program as the state focused on y2k. After Y2K, we are now left with aging legacy systems with dated data entry and information reporting vehicles. Fortunately, some represent the mainline agency business rules. For the most part, they have been upgraded over a 20-year life cycle but in a patchwork fashion. The team explored the possibility of jumpstarting the replacement of these systems. The first phase of the a web enablement replacement strategy would be to replace existing “front end terminal oriented technology” and replacing it with a PC and a web browser. This one small step is the beginning of a low risk transition plan for training business users, technical staff and network replacement without the risk associated with an entire system replacement. This first step enables the business user and consumer access to the same data and allows for the implementation of all of the other E-Government domain topics.

CRM Consumer Relationship Management

As the state web sites move into offering transaction processing the agencies must offer the same assistance the consumer received at a cashier or window. Managing this relationship with our consumer through electronic medium will require the state to implement consumer assistance strategies identical to what was available at the "window" i.e. visual and verbal assistance. Web enabled assistance is available through chat lines, interactive assistance with forms and telephone conversation over the web channel. The state needs to consider implementing this business strategy.

Portals and Consumer Definition

"Portal" is a term presently in vogue which describes a web site that allows the consumer to access familiar functions or personalizing the web site for a particular consumer or consumer group. The committee discussed the definition of portal as applied to the state. The committee also discussed the implementation of portals as a logical and technical issue. In order to define a portal it is necessary to define the topics of interest to consumers. The definition process may be externalized through surveys and analysis of other sites or internalized by measuring what the likes and dislikes through web utilization.

E-Commerce

The state has been slow to adapt to the web for transacting day to day business with the consumer. Few sites have the ability to enter and complete a request for service, permit or license online and there is only two applications in the state that enable the consumer to pay for a service with a credit card through the Internet. DOIT should implement the existing architectural model for use by all agencies.

Principles

NOTE: The domain team incorporated all the Conceptual Architecture Principles (CAPs) into the domain architecture. Principles that were not changed from the CAPs are listed only as the principle. CAPs modified or expanded by the team are listed with the changes to justifications and/or implications highlighted in Arial font.

Business Oriented Principles

Leverage the Internet

The Internet as a medium will be the first technology implementation option for new systems and when performing a rewrite or significant maintenance on a legacy system. All legacy systems should be visited and have developed an Internet enablement plan, for either information access only or for a transition from the legacy technology to Internet based technology.

Justification

- Allows the consumer anytime anywhere access to information
- Allows for consumer self service of state resources, taxes and licenses
- Allows for automated payment of resource utilization, taxes and licenses
- Reduces TCO(Total Cost of Ownership) for state operations
- Enhances positive public perception and awareness of state operations

Implications

- Requires standards for system planning, development and maintenance in order to measure the TCO for statewide implementation
- Require technical standards in order to reduce the TCO
- Requires technical and contract standards for E-Commerce
- Selected application will requires authentication of consumer
- Requires presentation and publishing standards
- All agencies will be required to construct and publish audible and enforceable information sharing policies and guidelines
- Requires content management standards and policy for information refresh
- Requires security, confidentiality and privacy policy and disclaimer for each agency and for **ALL** portals with intra inter state information(all being state, quasi public, and private organizations)
- Requires a significant upgrade to our existing Call Desk and Consumer Management Relations Process and automated systems.
- Web sites will be required to define consumer population and business need
- Requires an information copyright on all state information
- Requires an understanding that information is a state resource

Information Is an Enterprise Asset

Information is valued as an enterprise asset, which must be shared to enhance and accelerate decision making.

Justification

Implications

- Need to develop policy pertaining to information stewardship (with no local proprietary ownership*).*
- Information value must be identified, authenticated, and leveraged *and protected (copyright).*
- Need for unified information management.
- Need to establish supporting policies for security, privacy, confidentiality and information sharing.
- Data needs to be structured (*categorized, indexed, optimized*) for easy access and management *and sharing*.
- Need to address statutory definition of data ownership

Architecture Management

The planning and management of the State's enterprise-wide technical architecture must be unified and have a planned evolution that is governed across the enterprise.

Architecture Compliance

Architecture support and review structures shall be used to ensure that the integrity of the architecture is maintained as systems and infrastructure are acquired, developed and enhanced.

Implications

- A structured project level review process will be needed to ensure that information systems comply with the IT Architecture and related standards.
- Processes incorporating the principles of this (technical) architecture must be developed for all application procurement, development, design, and management activities.
- This compliance process must allow for the introduction of new technology and standards. *Introduction process must consider useful product life cycle*.
- Conceptual Architecture and Technical Domain principles should be used as evaluation criteria for purchasing as well as developing software.

Leverage Data Warehouses

We should leverage data warehouses to facilitate the sharing of existing information to accelerate and improve decision-making at all levels.

Ensure Security, Confidentiality and Privacy

IT systems should be implemented in adherence with all security, confidentiality and privacy policies and applicable statutes.

Reduce Integration Complexity

The enterprise architecture must reduce integration complexity to the greatest extent possible.

Re-use before Buying, Buy before Building

We will consider re-use of existing applications, systems, and infrastructure before investing in new solutions. We will build only those applications or systems that will provide clear business advantages and demonstrable cost savings

Integration

Systems must be designed, acquired, developed, or enhanced such that data and processes can be shared and integrated across the enterprise and with our partners.

Reengineer First

New information systems will be implemented after business processes have been analyzed, simplified or otherwise redesigned as appropriate.

Total Cost of Ownership

Adopt a total cost of ownership model for applications and technologies which balances the costs of development, support, training, disaster recovery and retirement against the costs of flexibility, scalability, ease of use, and reduction of integration complexity.

Justification

Minimize Platform Configurations

Create a small number of consistent configurations for deployment across the enterprise.

Basic Information Services

A standardized set of basic information services (e.g., email, voicemail, e-forms, Intranet, user training) will be provided to all employees.

Justification

- Increases productivity.
- Reduces costs of maintenance.
- Provides the basis for multi-agency or statewide business initiatives.
- Provides for universal employee access to information.
- Provides for employees to maintain their own personnel information

Implications

- Basic services definition needs to be created and regularly reviewed.

- May increase “one-time” costs to upgrade to the minimum service level.
- Training must be provided to all users of basic services.
- Selected internet access may apply for certain employees.

Technology Oriented Principles

Shared Components Using an N-Tier Model

Applications, systems and infrastructure will employ reusable components across the enterprise, using an *n-tier* model.

Logical Partitioning and Boundaries

The logical design of application systems and databases should be highly partitioned. These partitions must have *logical boundaries* established, and the logical boundaries *must not be violated*.

Justification

- A change in a database or application can potentially affect many large programs, if they are not highly partitioned.
- You can not separate the components in a system from each other without creating logical boundaries.
- Recoding leads to time-consuming re-testing.
- Partitioning isolates/minimizes change impact.
- Partitioned code is more adaptive to changes in internal logic, platforms, and structures.
- Provides for lower cost than extranet application operation

Logical Data Server Partitioning

IP servers will be logically partitioned to better understand and manage information and applications

Justification

- Application and Information will be more easily identified and managed
- Application and Information security will be more easily managed
- Data Mart and application development servers may be more easily and cost effectively managed outside of secure boundaries when proven an efficient business operation.

Implication

- Specific naming conventions should be adopted to represent: Web, Proxy, News/Mail, Application, File Transfer, Operational Data, Data Mart, Data Warehouse
- Standards and guidelines must exist for transfer of data and version control

Message-Based Interfaces

The interfaces between separate application systems must be *message-based*; this applies to both internal and external systems.

Event-Driven Systems

We must deploy E-Government, E-Commerce and CRM Customer relation Management application systems that are driven by business events. Deployment should be time-boxed to yield significant operational deliverables within consumer expectation (time-box = life cycle of business event).

Justification

- Enables applications to adapt quickly to changes in business processes by only changing the application component related to the changed business event.
- Strengthens linkage to the business by mirroring the actual business environment.
- Easier to realign IT when change occurs.
- Increase state agency business operation expectation level for information and information system delivery service performance

Implications

- Requires systemic thinking as event-based processing crosses traditional system boundaries.
- Business processes need to be optimized to obtain full benefits.
- Need to retrain developers to incorporate business concepts in their software development methods.
- Planning and development methodologies and practices will be effected

Physical Partitioning of Processing

We should separate on-line transaction processing (OLTP) from data warehouse and other end-user computing.

Formal Software Engineering

The State shall adopt and employ consistent software engineering and Business Process Engineering (BPE) practices and methods based on accepted industry standards.

Justification

Implications

- Need to agree on practices and methods.
- Requires training in the practices and methods.
- Requires monitoring for compliance.
- All State IT organizations and third party developers will employ the State's software engineering practices and methods.
- Need to develop in-house software engineers.
- Must employ time boxing practices

Alternative External Interfaces (New Domain Specific Principle)

This interface includes, cell telephones, PDAs, voice response, Internet email, palm PC type devices

Justification

- Provide portable, anytime, anywhere access.
- Support accessibility standards and architectures
- Provide access choice to consumers

Implications

- require additional design and implementation effort
- require(continue to maintain) low speed network services

Business Continuity Oriented Principles

Mainstream Technologies

IT solutions will use industry-proven, mainstream technologies.

Industry Standards

Priority will be given to products adhering to industry standards and open architecture.

Disaster Recovery / Business Continuity

An assessment of business recovery requirements is mandatory when acquiring, developing, enhancing or outsourcing systems. Based on that assessment, appropriate disaster recovery and business continuity planning, design and testing will take place.

Enterprise Network as Virtual LAN

We must implement a statewide backbone network that provides a virtual, enterprise-wide local area network.

Scalability

The underlying technology infrastructure and applications must be scalable in size, capacity, and functionality to meet changing business and technical requirements.

Technical Topics

The domain team organized the technical aspects of the Internet / E-Government Domain into five categories:

A. WEB Publishing – Creation, Maintenance and Content Management
B. Application Externalization – Web Enable Legacy Systems
C. Consumer Relationship Management (CRM) – Consumer Assistance through the Internet
D. Portals – Consumer defined web sites
E. E-Commerce –Transacting Financial Exchanges over the Internet

Each category has Implementation guidelines (what to do) and best practices (how to do it).

A. WEB Publishing – Creation, Maintenance and Content Management

Web publishing consists of those topics involved with the presented images, the process for creation of web site, maintenance of the site, and content management. Content being all visuals information-graphical, text and data.

Web publishing in the state is performed by the individual agencies, each with an individual or group of individuals serving as a webmaster. Selected agencies have uniform practices as to what will be on the web site and standards as to presentation and content. Some agencies have several web sites that may or may not be linked to the agency web page. Selected agency web pages do not reference the ConneCT site (the official state web site), the "State of Connecticut" or exhibit common format for links and page formatting. This results in consumer attitude adjustment as they browse from site to site or to meta pages within the agency site. Common practices for web development should be available and their practice audited to avoid consumer frustration and site abandonment.

CMAC (ConneCT Management Advisory Committee) has developed web presentation guidelines, which are not always adhered to or enforced as evidenced by inconsistency in web site presentations. These guidelines need to be augmented and include statement on testing, operations, content management, change management and data retention. An auditing process should be established to ensure adherence to the guidelines.

Content management is an issue that needs to be addressed for all web sites. This could begin with the definition of content and what rules apply to the content. A problem faced by the CMAC organization is that the webmaster for the agency seldom is the content manager. Each agency should have a clearly defined responsible party for all web content. Rules for agency content need to be defined. The State Library is in the process of implementing rules for metadata (information about the data through CORC). These rules could be adopted by CMAC but CMAC does not speak for the agency content managers. Information retention and change management should follow the State data retention guidelines however; it does not appear that archiving rules uniformly exist for web site data. In addition, information on the site may be less current than hard copy available from other sources in the agency. An organization similar to CMAC could be developed and initiate a discussion or joint venture with the State Library to ensure that all web site information follows defined retention rules.

Web developers use a varied toolkit for creating sites. Definition of a common toolkit would enable reduced costs or at least make available discounts on software and upgrades, enable the

creation of a common training and support program, and reduce some of the operational impacts resulting from inefficiently employed tools.

Implementation guidelines (what to do)

- Develop best practice guidelines for web publishing to include design guides, testing guides and operational procedures
- Develop a governance process to ensure that the best practice guidelines are followed.
- Develop privacy and access policies for all agencies before creating a web presence.
- Develop policy concerning information sharing and a ”data as a consumer resource” model.
- Define manageable service level agreements that are metric based
- Develop best practice for content management including standardize identification scheming and retention rules, ownership.
- Define content as it applies to state web applications.

Best practices (how to do it)

Best practice guidelines:

- Build on the existing ConneCT guidelines to include a design guide, testing guide and operational procedures
- Best practice should include common look and feel where applicable
- Best practices should accommodate agencies with a competitive marketing requirement
- Best practice should accommodate a commonly employed methodology to include phases: Concept, planning, implementation (development, testing, rollout), close, maintenance
- Acquire the service of professional writers to augment the development of these procedures
- Common tool kits should be defined in order to take advantage of cost reductions through master contract, common training and software support.

Governance process

- Enforce the ConneCT charter to perform pre-implementation review or periodic audit of agency web sites to ensure adherence to publishing guidelines
- Manage development and operations with metric based service level agreements

Content management

- Automate content management process wherever possible to ensure change management, version control and archiving are being performed
- Create policy for each agency to define information ownership, stewardship, contact person, access rules, and data retention. Build on the state library CORC (Cooperative Online Resources Catalogue) project and state defined data retention rules.
- Explore the possibility to work with State library to automate the rollover of archived and retained data.

Standards

- Use the existing ConneCT guidelines for agency web site best practices
- Use Front Page 2000 as the base product for the web developers toolkit
- Incorporate Federal Rehabilitation Act section 508 – 2000 additions in all state agency and state funded web sites

B. Application Externalization – Web Enable Legacy Systems

Application externalization is the generic name for the process of taking an existing or proposed traditional computer based system and making it accessible through the Web. Typically, the state has developed computer based application systems that are fed by forms mailed to a state agency and entered by administrative staff. The Web has enabled the state agencies to allow the consumer direct access to the entry process thus saving commute and office time. We are passing through a transition similar to the banking industry offering ATMs. The overwhelming choice on the part of the consumer was to use the ATM as opposed to waiting in line to perform a traditional banking process manually. Every state agency needs to examine their traditional legacy business process for the potential for web enablement thus externalize the data entry and information validation business process.

We need to establish a web enablement plan for all legacy systems. This will determine the priority of bringing information to the public. We can also determine that one system may have no need for web enablement while others may be suited only for Intranet (internal to the state or agency). A web enablement plan will permit orderly less risky system replacement strategies.

A web enablement plan will incorporate a plan to retain and invest in our valuable personnel resource supporting the existing legacy system. These personnel may be trained in the new web based technology while supporting the legacy system. Training these personnel in new technology is far more productive and significantly less costly that training new technicians in our business processes.

A web enablement plan beginning with a browser based front end to a legacy system offers a less risky implementation strategy. Too often when implementing large legacy systems we have elected to implement the technology and new business system concurrently. Many times this has had led to costly time consuming and organizationally traumatic implementations. We now have a choice. We can place a browser based front end to a legacy system then train the business user in new technology, train our technical resources, replace our aging proprietary network systems independent of replacing our entire mainframe application. The application can then be rewritten with significantly reduced impact on the agency business community.

There exists a web enablement plan consisting of direct code conversion, which should be investigated fully. Often the outcome leaves the agency with new computer code in a modern language but with a legacy system containing the old business rules and procedures. This option can have a significant impact on the technical staff with minimal benefit to the agency business community.

A web enablement plan will consider “push” data operations were information from the legacy databases is moved to a web accessible server. The legacy systems are often behind a highly secure “firewall” operating under maximum access protection rules. Not all of the information in a legacy system requires secure access protection, particularly if it is read only. Moving these data to web accessible environments or “data marts” provides information to our consumers and extends the life of an aging legacy application.

DOIT presently has applications utilizing an architecture based on: Application server - Host on Demand and WebSphere, w/CICS transaction server and gateway. Legacy enablement systems implementing a browser based front-end solution will follow this architecture unless presented with one that is more cost-effective.

Implementation guidelines (what to do)

- Develop a web enablement plan for each agency legacy system
- Develop a transition plan to include browser based front-end replacement to complete rewrite
- Develop technology planning rule " no rewrite or replacement unless web option is considered"
- Develop common practices for inter and Intranet development.
- Develop "push" data file options to augment the life of legacy systems

Best practices (how to do it)

- The web enablement plan should include transitioning: business user, technician, equipment, and network
- Transition plan should consider all options including browser enablement, code conversion, rewrite, transfers, and an Intranet to Internet transition plan.
- Utilize "push" information operations strategy
- Intranet legacy systems adopting a browser based front end should employ Host on Demand with Screen Customizer
- Internet legacy applications adopting a browser based front end should employ WebSphere Host Publisher
- Intranet and Internet applications desiring to make changes to the application but not to the extent of rewriting should consider WebSphere Host Publisher
- Plans should consider a commonly employed TCO
- A WAP standard option should be a consideration

Standards

- Intranet legacy systems adopting a browser based front end should employ Host on Demand with Screen Customizer
- Internet legacy applications adopting a browser based front end should employ Websphere Host Publisher
- Intranet and internet applications desiring to make changes to the application but not to the extent of rewriting should consider Websphere Host Publisher

C. Consumer Relationship Management (CRM)

Consumer Assistance through the Internet

Infrastructure support is the capability of a web site application to offer assistance to the consumer. The Request for Assistance can be for any topic i.e. hours of operation, web site navigation, available information, how to fill out a form. The web has raised the level of expectation of the consumer not only in terms of static information but to now expect assistance at web speed. State web sites and the service levels available are being compared to those offered through commercial interests. The question asked by the consumer is "why can't the state do this?" The state must remain current with web business practice if we are to have a web presence. In many circumstances, the services offered by the state have no competition. However, the 'request for assistance' business model pertaining to acquiring or transacting services can be compared against other customer service models available from the private or commercial marketplace. Our competition is not the service provider but the model in how well

we perform consumer assistance in offering the service. When buying a car there are few complaints about requiring a registration form. Most complaints are about how to fill it out.

Web enabled CRM is a combination of automated web response and personal interaction with an experienced subject matter expert. Most state web sites have email or telephone response to questions concerning the site. ConneCT has employed a frequently ask question (FAQ) file initiated by a consumer email request. Most sites should consider this mode of Consumer assistance.

There are many options available for a web enabled CRM program. FAQ is the initial entry in CRM. FAQ sites have evolved into automated FAQ because file management can become critical. Indexing and search engines for the responses to questions become the measures for a successful CRM site. Interactive chat can be employed with a consumer service representative. Service representatives can initiate voice response through the Internet to assist the consumer. For those applications requiring forms, we may consider the attached browser option. Here the service representatives work interactively with the consumer though the consumer's browser to assist in filing out a form, permit or license request. All of these are examples of what is available with web enabled CRM.

Commercially available products can simplify and standardize the web enabled CRM process. Software is available to be implemented as plug-ins to any Internet application. The FAQ's file can be shared across an agency or specific to a transaction. Most of the packages allow for reporting and sorting of questions by business user defined criteria. The information available from these databases assists in improving the business application and will assist in designing consumer centric "portals". The shared file can be a management tool for improving our web presence.

There are technical and business risks associated with CRM applications. The technical risks are associated with increased activity on the web sites. Bandwidth for both the state server and the consumer ISP will be affected. Privacy is a consideration as the consumer is requesting one-on-one assistance. The Privacy issues related to requesting this assistance must be made available to the user before entering the interactive service. The major business ramifications consist of privacy and the responses to FAQ. They are business decisions that can vary between agencies. This in itself may be confusing to a web user. Privacy can be implemented in levels; or have a policy of interacting with a client and upon conclusion of the session, delete all information pertaining to the conversation. Responses to the FAQ may require administrative or legal review before being placed in the FAQ database. If elapsed time is an issue, this may require the creation of an organization staffed specifically for Consumer support.

A critical issue in the CRM call desk architecture is the browser. The commercial products available for web enabled call desk support require a stable browser environment with standard interfaces and options. The state should adopt a standard for browsers in order to support automated customer assistance. Although most of the major web enabled, CRM products support multiple browser products; they all have Explorer and Netscape in common. A standard browser set would also reduce the costs of our web application support and acquisition process.

Implementation guidelines (what to do)

- Define and evaluate successful implementations, products and implementation vendors
- Acquire a full service product
- Define a pilot for proof of concept

- Identify all server architecture data, application, presentation, security, mail, news, and Inter-Intra-Extra net architectures
- Identify complete TCO
- Identify agency preparedness
- Define metrics for successful implementation
- Identify successful web site implementations
- Be prepared to implement pilot (if successful we can't withdraw)
- Staffing, training, funding, RFP as required for acquisition
- Prepare a model MOU for agencies to follow concerning level of help desk support
- Identify all matter requiring agency approval structure for answers on questions

Best practices (how to do it)

- Prepare best practice manual
- Acquire consultant assistance and technical writer
- Include agency preparedness guideline
- Include TCO
- Include metrics based QA process for measuring success
- Number of responses
- Response time to question
- Response time to request for assistance
- Level of assistance
- Customer satisfaction with assistance
- Acquire product that supports
- ConneCT guidelines
- Allows deployment at site and transaction level
- Utilize a standard browser set consisting of Netscape and MS IE
- Create and implement all germane privacy rules
- Evaluate and test preparedness to respond or implement changes do to requests

D. Portals – Consumer defined web sites

Early definitions of web sites were based on a population of interested browsers or surfers. They were design to present the agency, and services or information available from the agency in a structure similar to an organization chart. The new web site, loosely defined as "Portal", provides a web surfer or consumer with the actual functions preformed by the organization defined in a consumer centric model as opposed to an agency organization chart. Popular consumer centric portals defined by some states contain Citizen, business and employee "portals". Each of these portals led to specific services or topics of interest for that consumer group.

A portal is really defined by the knowledge that the consumer has of the organization. As a consumer is more knowledgeable as to what is available, they then become a more sophisticated user of the services. Thus, Portals may be defined as enterprise wide or with varying degrees of personalization. The enterprise level portal may be depicted as citizen, or business oriented. The personal portal may be defined by life events, by consumer interest groups, or by identifying the actual citizen. The consumer builds the personal portal through menu driven subject matter

available in an enterprise portal. Knowing the consumer population is essential to elected government and will be the measure of successful portal web sites.

Applications may require personal portals, which deals only with authentication, e.g., one common personal portal for authentication purposes. This is common in performing business services. Contractor or Professionals do not want to have a collection of PINs in order to do business with the state.

Portals may require the need for a change in ownership attitude of data, e.g., data is a consumer resource not an agency resource. Information ownership, access and privacy are presently agency issues. Successful portal implementations will require the view that information is a consumer resource, which transcends agency boundaries. This may require changes in statutes and regulations. An advocate will have to be created to support information at the state level before we eventually arrive at the consumer friendly portal.

As web utilization matures, both web types will be required. The original organizational web site provides structure necessary for content management while the portal approach enables the consumer, with no knowledge of the state organization, to access information germane to their special interest.

Implementation guidelines (what to do)

- Define portal types
- Evaluate portal implementation strategies for state business and technology
- Develop portal support strategies for state business and technology
- Develop strategies for determining consumer groups and interests
- Review agency regulations and statutes to permit information sharing
- Develop privacy and access policies for Portal.
- Develop policy concerning information sharing and a ”data as a consumer resource” model
- Develop content management strategies that enable portal access

Best practices (how to do it)

- Web portals should be defined with the following concerns:
- Consumer centric and/or content centric
- Web application should have a clearly defined consumer
- Interactive, customer demographic captures and profile analysis
- Levels of Personalization should be available on most web sites
- Personalized web sites should have authentication and privacy policies immediately available on entry to the site
- A WAP standard should be a consideration
- Pilot WebSphere Foundation and extensions

E-Commerce –Transacting Financial Exchanges over the Internet

E-Commerce (electronic commerce) is loosely defined as the transacting of financial exchanges over the Internet. The state has one E-Commerce application and a second will be in production at the publication of this document. These applications use an architectural framework presently in place and supported by DOIT. The DOIT frameworks only apply to those contractual arrangements for financial institutions negotiated by the State Treasurer.

The DOIT intent is to provide a standard technical framework for all E-Government applications. The agency specific components include the actual electronic storefront and the business office procedures for refunds, cancellations, abandonments and any required pre-approvals. A technical architecture may be developed for these but there are presently no standard business models to build the architecture. Most of these business processes are new to the state. The technical architecture will be implemented with APIs required by the financial and security software products identified in the product standard tables. The architecture is available for distribution with RFPs. DOIT will provide a technical support team to implement the systems, and provide technical application support or the agency may competitively bid a project using a pre-approved contractor list.

All E-Commerce applications presently and will continue to require authentication of the consumer. This may be accomplished through PIN numbers, passwords or Public Key Infrastructure (PKI). Agencies must be prepared to support the administrative issues involved in authentication. PINs and passwords systems require maintenance and customer assistance. A form of biometrics authentication may replace the use of certificate processing. The state should be prepared to pilot alternate means of authentication such as popular forms of biometrics. The state also needs to pilot the use of new forms of E-Commerce (debit cards). The debit card financial institution may issue certificates, which may be employed for the financial transaction as well as other authentication requirements. Thus serving to accommodate the financial transaction requirement for authentication and then allowing the consumer to use that same certificate for other authentication purposes. E.g., inquire on personal information or status of a request.

Implementation guidelines (what to do)

- Implement the reusable components and standardized package model for all agencies to employ.
- Develop template for common business practices which will be new to state: return, pre approval, rejected and abandoned transactions

Best practices (how to do it)

- Issue the DOIT E-Commerce architecture model as a package for use by all agencies
- include application plug-ins for access to commercial partners
- Provide standard scalable architecture
- Provide technical system support group
- Provide Common Electronic storefront template
- Provide all rules and implementation standards for authentication

Standards

- The DOIT E-Commerce architecture will be employed for all credit card applications

Standards and Product Standards

The purpose of an EWTA is to create a business-driven blueprint for the application of technology toward solving business problems. Effective architectures are prescriptive. The domain technical architecture must guide and direct infrastructure and development engineering decisions. Standards are an important vehicle for providing this guidance and play an important role in enabling easy interchange of components from multiple vendors. The primary value offered by IT industry standards are to enable integration of systems and applications both within and between enterprises.

There are two types of standards that are addressed in this paper:

- Technical standards, to which products or implementations must comply with, or conform to, and
- Product Standards, specific vendor offerings that the State has selected from among the products that comply with, or conform to, the technical standards.

Life Cycle of Standards

Standards, whether technical or product have a life cycle which encompasses four major categories:

Obsolete

It is highly likely that these standards or products while still in use, will not be supported in the future. Plans should be made to rapidly phase out and replace then with more preferred or strategic standards or products. No development should be undertaken using these standards or products.

Transitional

These are standards or products in which an agency or the State has a substantial investment or deployment. These standards and products are currently supported. Support will be maintained for the next two to three years. However, development using these standards or products should only be undertaken if there are no suitable alternatives that are strategic or preferred.

Preferred / Strategic

These are the standards and products selected by the state for development or acquisition, and for replacement of Not Supported or transitional standards or products.

Research

This category represents proposed standards and products in development that should be considered by the state as candidates for consideration as preferred or strategic. These standards and products need to be tracked and evaluated over the next 12 to 18 month.

Table 1 summarizes the categorization of technical standard and product standards for the Web / E-Government Domain.

Web Publishing

Standard 1: Use the existing ConneCT guidelines for agency web site best practices

Standard 2: Use Front Page 2000 as the base product for the web developers toolkit

Standard 3: Incorporate Federal Rehabilitation Act section 508 – 2000 additions in all state agency and state funded web sites

Application Externalization

Standard 4: Intranet legacy systems adopting a browser based front end should employ Host on Demand with Screen Customizer

Standard 5: Internet legacy applications adopting a browser based front end should employ WebSphere Host Publisher

Standard 6: Intranet and internet applications desiring to make changes to the application but not to the extent of rewriting should consider WebSphere Host Publisher

Standard 7: WAP (proposed standard)

Consumer Relationship Management

Standard 8: Utilize a standard browser set consisting of Netscape and MS IE

Portals

Standard 9: WAP (proposed standard)

E-Commerce

Standard 10: The DOIT E-Commerce architecture will be employed for all credit card applications

Table 1 Web / E-Government Technical Standards

	Status Category			
Product Existing or Proposed	Obsolete	Transitional	Strategic	Research
ConneCT required presentation format and elements			✓	
State Library CORC data retention rules			✓	
Fed Rehab Act sect 508			✓	
CyberCash APIs			✓	

Table 2 Web / E-Government Product Standards

	Status Category			
Product Existing or Proposed	Obsolete	Transitional	Strategic	Research
Web Site Publishing and Maintenance				
IBM WebSphere Host Publisher			✓	
IBM WebSphere CICS transaction server and gateway			✓	
IBM WebSphere Foundation				✓
IBM WebSphere Foundation extensions				✓
Adobe Illust (incl Mac)			✓	
Adobe GoLive				✓
Adobe Book (incl macintosh)			✓	
Adobe Photoshop			✓	
Dreamweaver			✓	
Fetch (Mac)			✓	
Fireworks				✓
H-J JAWS			✓	
H-J MAGic			✓	
Image composer			✓	
Micrografx				✓
MS FrontPage 2000			✓	
MS FrontPage 97/98		✓		
Net Composer			✓	
Net studio			✓	
Paintshop Jasc			✓	
Power Point			✓	
WS FTP Pro			✓	
E-Commerce				
MS Site Server 3.0		✓		
MS Commerce Server		✓		
CyberCash			✓	
Other Products				
Rightnow				✓
Kana				✓
egain				✓
Servicesoft				✓
primus				✓
brightware				✓
Broadvision				✓

	Status Category			
Product Existing or Proposed	Obsolete	Transitional	Strategic	Research
Other Products cont.				
Hummingbird				✓
Viador				✓
Epicentric				✓
Verity				✓
BroadVision				✓
Plumtree				✓
Vignette (portal management)				✓